

# MACT Training Subpart WWWW – Reinforced Plastic Composites

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2/23/05

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## Overview

- ☞ Pretest
- ☞ Industry Overview
- ☞ Applicability
- ☞ Compliance Requirements
- ☞ NE facilities
- ☞ Post-test



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## Industry Overview

- ☞ Composite – combination of materials each made of distinct & different properties
- ☞ Thermosetting polymer resins and reinforcement fibers
  - Usually glass fibers could be graphite or other
  - Thermoset – can not be softened by heating

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## Industry Overview

### Common products

- Boats,
- Tubs
- Sinks
- Automotive/RV bodies
- Underground gasoline storage tanks



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## Industry Overview

### Open Molding

- Most common
- Resins, reinforcement, and other materials applied by hand or sprayed
- Gel coat applied to mold – appearance, color, & weather resistance
- Glass (resin) sprayed on mold (reinforcement)
- Mold left open while cured
- Product removed from mold

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Gel Coat spray booths

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Outside gel coat booth

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Resin/Fiberglass spray booth

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Resin/Fiberglass spray booth

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Resin/glass spray booth

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Resin/glass spray gun

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Rolling out resin after sprayed

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Cleaning glass off floor

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Trim Booth

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## Industry Overview

### ☞ Casting

- Poured into mold – sinks, countertops
- Centrifugal – pipes
- Continuous – placed on an inline conveyor belt to produce cast sheets

### ☞ Closed Molding - RTM

- Liquid resin not exposed to air
- Expensive – high quality products



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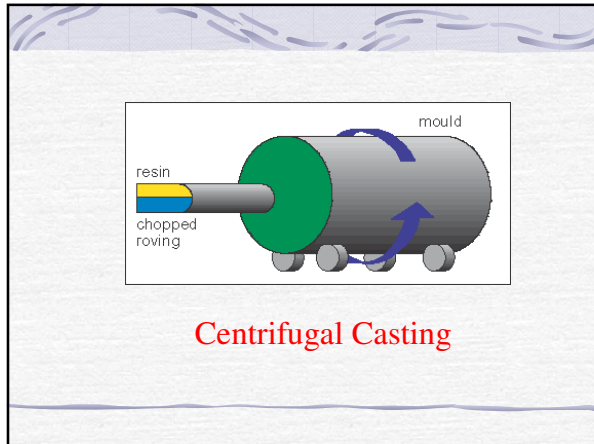
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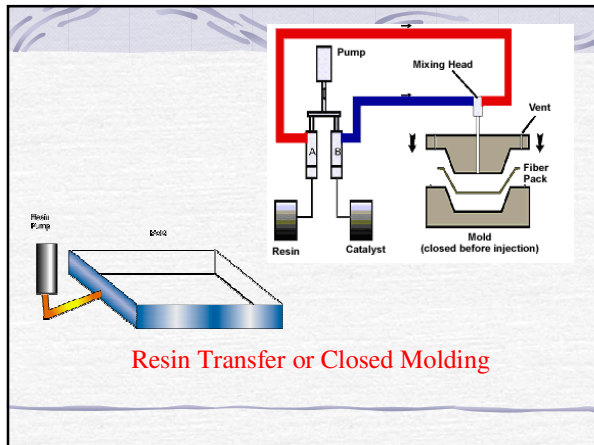
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### Industry Overview

- ☛ Pultrusion
  - Lengths of fiber glass pulled through resin and put into heated mold
  - I-beams, ladders, fence posts
- ☛ Filament Winding
  - Lengths of fiber fed through resin bath and wound on to rotating mandrel




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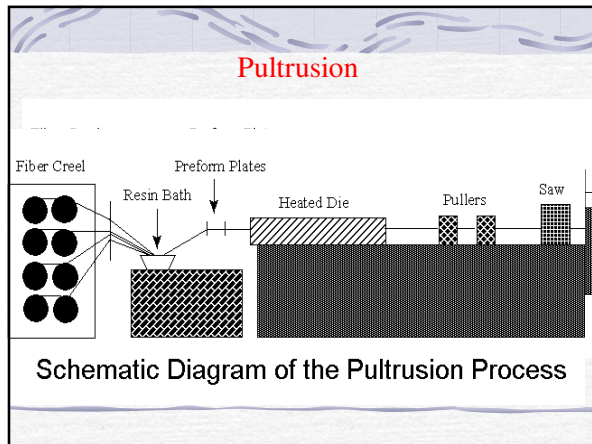
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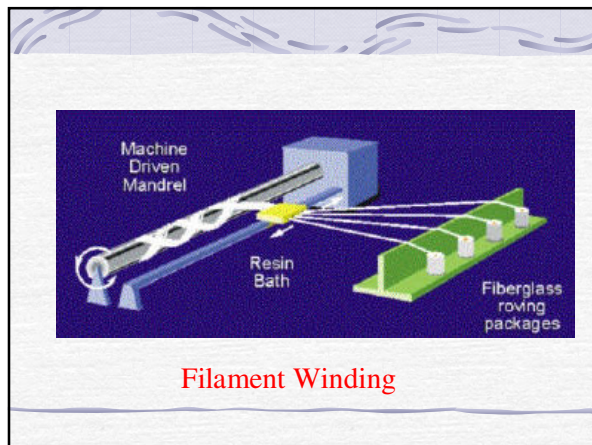
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### Industry Overview

- ☞ Emissions
  - Mainly Styrene & MMA
  - Some MEK, xylene, & cobalt
  - Cleaning solvents may have HAPs
  - Acetone used a lot – but not a HAP or VOC
  - Particulates from trimming & sanding
- ☞ UEF table used for open molding
  - Not all emissions evaporated

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## MACT

- ✓ Proposed 8/2/01
- ✓ Promulgated 4/21/03
- ✓ Subpart WWWW
- ✓ 40 CFR Part 63.5780



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## MACT Applicability

- ✓ Major sources (HAP PTE >10 & 25)
- ✓ Reinforced or non-reinforced plastic composites manufacturer
- ✓ Uses thermoset resins and/or gel coats that contain styrene



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## MACT Applicability

- ✓ Exempt
  - Area source
  - Only repairs reinforced plastic composites
  - Research & Development
  - Use <1.2 tpy of resins & gel coats that contain styrene

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## MACT Applicability

### ☞ Fiberglass boats or boat parts

- If all composites used in boats
  - Subject to Subpart VVV
- If have both
  - Those not used in manufacture of boats – comply with this rule
  - Could have all operations subject to Boat MACT, if emissions would not increase



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## MACT Applicability

### ☞ New source

- Construction/reconstruction commenced after 8/2/01
- AND no other reinforced plastics composites existed at site when construction commenced

### ☞ Existing – everything that isn't new!

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## Compliance Requirements

- ☞ Emission Limits, HAP content limits, or emission reduction
- ☞ Work practices
- ☞ Recordkeeping
- ☞ Reporting



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## Emission Limits

- ☞ New source emitting <100 tpy of HAPs

- ☞ Existing

- Emit <100 tpy from centrifugal casting & continuous lamination
- **Or** don't have those operations

See Table 1  
on EPA's  
brochure for  
Emission  
Limits

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## Emission Limits

- ☞ New emit  $\geq$  100 tpy of HAPs

- ☞ Existing emit  $\geq$  100 tpy from centrifugal casting & continuous lamination

- 95% reduction of emissions
- Also, meet emission limits for other operations

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## Large Parts Exemption

- ☞ New Sources subject to 95% control

- Meet emission limits in Table 3 of rule
- Open molding part >250 cubic feet or 50 square feet on one side
- Large pultruded part >24 inches outside perimeter, or 350 or more reinforcements



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## Large Parts Exemption

- Existing pultrusion operations
  - Substitute "air flow management" for 60% emission reduction
  - Cross sectional area of 60 inches or more and 1,000 or more reinforcements

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## Work Practice Requirements

- All operations must meet specific work practice standards
  - E.g. No HAP cleaning solvents – except styrene in closed system & used to clean cured resin from guns
  - Keep containers that store HAPs closed or covered except when adding or removing materials
  - See Table 2 on EPA brochure

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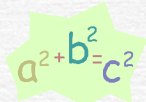
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## Compliance Dates

- Existing
  - 4/21/06
- New
  - Upon startup
  - Or 4/21/03; whichever is later



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## Compliance Dates

- ☞ Sources that emit <100 tpy but increase to >100 tpy,
  - Comply 3 years from the compliance report listing exceedence
- ☞ Sources can exceed 100 tpy once in calendar year
  - One time exemption
  - Notify permitting authority

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## Determining HAP Emissions

- ☞ Existing
  - Initial calculation with data 12 months prior to 4/21/03
  - Calculate again with data 12 months prior to compliance date
- ☞ New
  - Projected emissions for the 12 months following startup

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## Determining HAP Emissions

- ☞ Emission factors from Table 1 in rule
- ☞ Performance testing
- ☞ UEF factors
- ☞ Permit requirements



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### Open Molding & Centrifugal Casting

- ✓ Meet individual HAP emission limits for each operation
- ✓ Meet HAP emission limits as weighted average
- ✓ Use compliant resin & gel coats
  - See Table 3 of rule for %
- ✓ If several types of operations, can meet emission limit for one & use same resin for all operations

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### Continuous Lamination/Casting

- ✓ Demonstrate each line meets standard
- ✓ Average across lines
- ✓ Add-on controls – 58.5% emission reduction
- ✓ Add-on controls – capture all wet-out area emissions in permanent enclosure & vent to 95% efficient control device
- ✓ Use combination

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## Pultrusion



- ✓ Emit <100 tpy of HAPs
  - 60% reduction with add-on controls
  - 60% reduction with wet area enclosures & resin drip collection
  - 60% reduction with direct die injection systems that meet requirements
  - Preform injection
  - Use combination

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## Demonstrating Compliance




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## Emission limits

- ✓ HAP content of material - MSDS
- ✓ Monthly consumption rates
- ✓ Operations that use HAP-containing materials
- ✓ Calculate 12-month rolling totals within 30 days
- ✓ Can use purchase records
- ✓ If materials compliant – don't need to track monthly usage

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### Averaging provisions

- ✓ HAP content in products used for each operation
- ✓ Amount used in each operation
- ✓ Monthly calculations
- ✓ Purchase records can be used



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### Add-on Controls

- ✓ Subpart SS
- ✓ Performance test – every five years
- ✓ Monitor operating parameters from test
- ✓ If using enclosure provision
  - Conduct design evaluation
- ✓ Can use continuous emission monitors

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### Recordkeeping

- ✓ Copy of each notification & report
- ✓ Performance test records
- ✓ All data used to demonstrate compliance
- ✓ Certified statement that they are in compliance with the work practice requirements



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## Recordkeeping

- Continuous casting/lamination – documentation of emission factor rationale
- Add-on controls
  - Startup, Shutdown, & Malfunction (SSM) Plan
  - All records to show compliance with Subpart SS
- Records maintained 5 years

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## Notifications

- Initial notification
  - Existing – 8/19/03
  - New – 120 days after startup
- Notification of performance test
  - If using add-on control
  - 60 days prior to testing



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## Notifications

- Compliance status
  - Compliant coatings, equipment requirements, anything other than averaging
    - 30 days after compliance date
  - Emission limit averaging
    - One year plus 30 days after compliance date

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## Notifications

### ☛ Compliance status

- Add-on control device
  - 60 days after performance test
- Must include certified statement that you are complying with
  - Work practice standards
  - Equipment standards
  - Emission limits



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## Reports

### ☛ Semiannual compliance reports

- Either June 30 or December 31 – whichever is the first date after the compliance date
- No deviations statement
- Or, information on deviations
- Can use Title V reporting schedule per permitting authority

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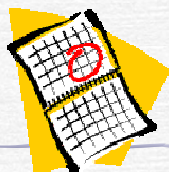
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## Reports

### ☛ SSM reports

- Those with add-on controls – didn't comply with SSM Plan
- Per General Provision Requirements



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## NE Facilities

- ☞ A-1 Fiberglass – Hastings
  - Largest facility
- ☞ A-1 Fiberglass – Aurora
- ☞ Concept Fiberglass – Grand Island
- ☞ All open & closed molding
- ☞ Several smaller sources that have taken limits to be area sources



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## Questions?

- ☞ Melissa Woolf
  - 471-6624
- ☞ EPA's Website
  - Great information
  - [www.epa.gov/ttn/atw/rpc/rpcpg.html](http://www.epa.gov/ttn/atw/rpc/rpcpg.html)
- ☞ **MACT Notebook Information**
- ☞ Composites MACT Compliance CD Demonstration



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